HD110 Command Line Interface

Purpose

This specification will define the serial command line streams for controlling a Knöll projector through the RS232 connector to the projector. These commands are intended to provide a simple secondary set of controls to the projector through what Knöll calls the Command Line Interface (CLI). The primary control set is through the Host Command Interface. The CLI is designed for use by what the industry commonly calls *boardroom controllers*. The CLI will accept commands via RS232 to control the necessary features used by most boardroom controllers. This CLI language will use a simple human readable protocol to help facilitate the installers' time necessary to setup or diagnose a problem with boardroom control installations. However, the CLI is not a guaranteed delivery system. The CLI is used internally at Knöll as a debugging tool and for downloading software.

Message Format

As commonly used in math notation, everything is evaluated in the parenthesis first, as the parentheses are designed to group things together. This same parenthesis nomenclature will be used to group a command and its data together (nested parenthesis are not supported). All commands are three alpha characters followed by the request. The request can be a ? symbol which signifies a read request, or a numerical number represented by 1 to 4 ASCII digits, which signifies a write request. Not all commands support reading and writing. The command table indicates the commands and requests that are supported.

Write Commands

Write commands have the following format:

(AAA####) where,

(- starts the CLI command

AAA - denotes the CLI function

- denotes the value to be written (leading zeros are not necessary)

) - ends the CLI command

Some functions have ranges for settings while others are Boolean. Settings with ranges range from some minimum number to a maximum number. If a number greater than the maximum is received, it is automatically limited to the maximum number for that function. If a number less than the minimum is received, it is automatically limited to the minimum number for that function. It is suggested that each function be queried for its range with a read command before issuing a write command. Boolean settings consider 0 as off and 1-9999 as on. The only exception is the Power command. The only valid write values that will be accepted will be '0' for turning the power off and '1' for turning the power on.

Examples:

Brightness Command	(BRT10)	Sets the brightness to 10
Volume Command	(VOL0000)	Set the volume to 0
Freeze Command	(FRZ1)	Freeze the display
Freeze Command	(FRZ9999)	Freeze the display
Power Command	(PWR0)	Turn power off
Power Command	(PWR1)	Turn power on
Power Command	(PWR9999)	ERROR: not recognized as a valid command

Read Commands

Read commands have the following format:

(AAA?) where,

(- starts the CLI command

AAA - denotes the CLI function

? - denotes the read request

) - ends the CLI command

A read command returns the range and the current setting in an ASCII format enclosed in parentheses.

Examples:

Brightness Command	(BRT?)	Returns (0-22,10)
Volume Command	(VOL?)	Returns (0-80,0)
Freeze Command	(FRZ?)	Returns (0-1,1)

Error Conditions If a command is received that is not understood, a '?' character will be returned indicating the command was not understood.

Limitations The CLI cannot respond to commands coming in at a high-rate. Therefore, a delay must occur between commands to ensure that the command is properly executed.

Supported Commands See below for a list of supported CLI commands for HD110.

Table 1. HD110 CLI Commands

Cmd	Attr	Computer		Video		Inc	Function
		Range	Value	Range	Value		
AIM	R & W	0 – 1	1	0 – 1	1	1	Auto Image Enable
ARZ	R & W	0 – 3 0 = standard 1 = native 2 = widescreen letterbox 3 = enhanced	1	0 – 3 0 = standard 1 = native 2 = widescreen letterbox 3 = enhanced	1	1	Resize

Cmd	Attr	Computer		Video		Inc	Function
		widescreen		widescreen			
ASC	R & W	0 – 1	0	0 – 1	0	1	Auto Source Control
ASR	R & W	0 – 1 0 = 4:3 1 = 16:9	1	0 – 1 0 = 4:3 1 = 16:9	1	1	Aspect Ratio
BCG	R & W	1 – 63	32	1 – 63	32	1	Blue Color Gain
BRT	R & W	4 - 252	128	64-192	128	4	Brightness
BSC	R & W	0 – 2 0 = blue 1 = black 2 = white	1	0 – 2 0 = blue 1 = black 2 = white	1	1	Blank screen
CEL	R & W	0 – 1	0	0 – 1	0	1	Ceiling
CLR	R & W	4 - 252	128	1 - 31	16	4	Color
CON	R & W	4 - 252	128	1 - 31	16	4	Contrast
CSM	R & W	0 – 7 0 = RGB 1 = SMPTE240 2 = REC709 3 = REC601 4 = * 5 = * 6 = * 7 = auto	7	0 – 7 0 = RGB 1 = SMPTE240 2 = REC709 3 = REC601 4 = * 5 = * 6 = * 7 = auto	7	1	Color Space Mapping
CTP	R & W	0 – 3 0 = 9300K 1 = 8200K 2 = 6500K 3 = user	0	0 – 3 0 = 9300K 1 = 8200K 2 = 6500K 3 = user	2	1	Color Temperature Preset
DKC	R & W	92-164	128	92-164	128	1	Keystone Correction
DMG	R & W	0 – 1	1	0 – 1	1	1	UI Message Enable
DSC	R & W	0 – 7 0 = PC1 - analog 1 = PC1 - digital 2 = Video 3 – Component HDTV 3 = Video 3 –	4	0 – 7 0 = PC1 - analog 1 = PC1 - digital 2 = Video 3 – Component HDTV	4	1	Default Source

Cmd	Attr	Computer		Video		Inc	Function
		Component 4 = S-video 5 = composite video 6 = PC2 – component 7 = PC2 - analog		3 = Video 3 – Component 4 = S-video 5 = composite video 6 = PC2 – component 7 = PC2 - analog			
DSU	R & W	0 – 1	1	0 – 1	1	1	Splash Screen Enable
FRZ	R & W	0 – 1	0	0 – 1	0	1	Freeze
GCG	R & W	1 – 63	32	1 – 63	32	1	Green Color Gain
GTB	R & W	0 – 2 0 = PC gamma 1 = video gamma 2 = film gamma	2	0 – 2 0 = PC gamma 1 = video gamma 2 = film gamma	2	1	Gamma Table
HPS	R & W	****	**	****	**	1	Horizontal Position
LAN	R & W	0 – 7 0 = English 1 = French 2 = German 3 = Spanish 4 = Portuguese 5 = Japanese 6 = Chinese 7 = Korean	0	0 – 7 0 = English 1 = French 2 = German 3 = Spanish 4 = Portuguese 5 = Japanese 6 = Chinese 7 = Korean	0	1	Language
LB1	R	0 – 32767	0	0 – 32767	0	1	Time in hours last bulb1 lasted
LB2	R	0 – 32767	0	0 – 32767	0	1	Time in hours last bulb1 lasted
LB3	R	0 – 32767	0	0 – 32767	0	1	Time in hours last bulb1 lasted
LML	R	0 – 1	1	0 – 1	1	1	Lamp Lit
LMP	R	0 – 32767	0	0 – 32767	0	1	Lamp Hours
LMR	R	0 – 32767	0	0 – 32767	0	1	Lamp Resets
LMT	R	0 – 2147483647	0	0 – 2147483647	0	1	Lamp Total

Cmd	Attr	Computer		Video		Inc	Function
							On
MNU	R & W	0 – 1	0	0 – 1	0	1	UI Menu Enable
MSS	R & W	****	**	****	**	1	Manual Sync Setting
MTE	R & W	0 – 1	0	0 – 1	0	1	Mute
MTS	R & W	****	**	****	**	1	Manual Tracking
NAV	W	0 - 4	-1	0 - 4	-1	1	Navigation
ONL	R	0 – 2147483647	0	0 – 2147483647	0	1	Unit on Total
OVS	R & W	****	**	0 – 1	0	1	Overscan (TV only)
PWR	W	0 – 1	1	0 – 1	1	1	Power
REA	R & W	0 – 1	0	0 – 1	0	1	Rear Project
RCG	R & W	1 – 63	32	1 – 63	32	1	Red Color Gain
RST	R & W	0 – 1	0	0 – 1	0	1	Reset
SBT	R & W	0 – 6 0 = 1 minute 1 = 5 minutes 2 = 10 minutes 3 = 15 minutes 4 = 30 minutes 5 = 1 hour 6 = 2 hours	3	0 – 6 0 = 1 minute 1 = 5 minutes 2 = 10 minutes 3 = 15 minutes 4 = 30 minutes 5 = 1 hour 6 = 2 hours	3	1	Standby Time
SHP	R & W	****	**	0 – 9	7	1	Sharpness (TV only)
SRC	R & W	0 – 7 0 = PC1 - analog 1 = PC1 - digital 2 = Video 3 – Component HDTV 3 = Video 3 – Component 4 = S-video 5 = composite video 6 = PC2 – component 7 = PC2 - analog	0	0 – 7 0 = PC1 - analog 1 = PC1 - digital 2 = Video 3 – Component HDTV 3 = Video 3 – Component 4 = S-video 5 = composite video 6 = PC2 – component 7 = PC2 - analog	0	1	Source

Cmd	Attr	Computer		Video		Inc	Function
STB	R & W	0 – 1	0	0 – 1	0	1	Standby Enable
TNT	R & W	****	**	1 - 31	16	1	Tint
VOL	R & W	0 – 62	25	0 – 62	25	1	Volume
VPS	R & W	****	**	****	**	1	Vertical Position
VSU	R & W	0 – 7 0 = Auto Video 1 = NTSC-M 2 = PAL-BGHI 3 = PAL-M 4 = PAL-N 5 = PAL-60 6 = SECAM 7 = NTSC 4.43	0	0 – 7 0 = Auto Video 1 = NTSC-M 2 = PAL-BGHI 3 = PAL-M 4 = PAL-N 5 = PAL-60 6 = SECAM 7 = NTSC 4.43	0	1	Video Standard

Communication Configuration

See table below for CLI communication configuration.

Table 2. CLI Communications Configuration

Setting	Value
Bits per second	19200
Data bits	8
Parity	None
Stop bits	1
Flow Control	None
Emulation	VT100